

Claims

1. A process for producing polymer foams which are based on reactive polycondensation resins and have a number average pore diameter of not more than 1 μm by gel formation, which comprises the following steps:
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- 1) preparing a gelable mixture of the reactive polycondensation resin in a solvent or dispersion medium,
 - 10 2) preparing an aqueous dispersion comprising polymer particles,
 - 3) mixing the mixture of the reactive polycondensation resin from step 1) with the dispersion comprising polymer particles from step 2) to give a water-containing gel, and
 - 15 4) drying the water-containing gel to give the polymer foam,
- with drying in step 4) being carried out at a pressure and a temperature which are below the critical pressure and below the critical temperature of the liquid phase of the gel and
- 20 the gel not being brought into contact with an organic liquid to replace the water present in the gel by this liquid after step 3) and before step 4).
- 25 2. The process according to claim 1, wherein the polymer particles have a mean diameter of from 20 to 500 nm.
- 30 3. The process according to claim 1 or 2, wherein the reactive polycondensation resin is an amino resin.
4. The process according to any of claims 1 to 3, wherein the amino resin is a melamine-formaldehyde resin.
- 35 5. The process according to any of claims 1 to 4, wherein the polymer particles comprise polymers based on monomers selected from among styrene, butadiene, alkyl acrylates and alkyl methacrylates.
6. The process according to any of claims 1 to 5, wherein the dispersion from step 2) comprises an ionic or nonionic surfactant.
- 40 7. The process according to any of claims 1 to 6, wherein the gel obtained in step 3) is subjected to aging before step 4).

8. The process according to any of claims 1 to 7, wherein the reactive polycondensation resin and the polymer particles are mixed with one another in a mixing ratio of from 10:1 to 1:10, disregarding water and other solvents or dispersion media, in step 3).
9. The process according to any of claim 1 to 8, wherein drying in step 4) is carried out at a pressure of from 0.5 to 2 bar and a temperature of from 0 to 100°C.
10. The process according to any of claims 1 to 9, wherein the polymer foam has a porosity of at least 70% by volume.
11. A polymer foam obtainable by the process according to any of claims 1 to 10.